HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Atty Docket No.: 200308989-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Donald James Milligan et al.	**Confirmation No.:**	2070
Serial No.:	10/734,153	**Examiner:**	Linh Thi Nguyen
Filed:	December 15, 2003	**Group Art Unit:**	2627

Title: ELECTROSTATIC ACTUATOR FOR CONTACT PROBE STORAGE DEVICE

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF - PATENTS

Sir:

This is an Appeal Brief in connection with the decisions of the Examiner in a Final Office Action dated September 2, 2008. Each of the topics required in an Appeal Brief and a Table of Contents are presented herewith and labeled appropriately.

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(1) Real Party In Interest

The real party in interest is Hewlett-Packard Development Company, L.P.

(2) Related Appeals And Interferences

There are no other appeals or interferences related to this case.

(3) Status Of Claims

Claims 1, 2, 4-8, 10-22, and 24-27 are pending. Claims 15-20 were indicated to be allowable. Claims 5, 13, 14 and 25 were objected to as being dependent from rejected base claims. Claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27 were rejected. Claims 3, 9, and 23 were canceled. Claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27, which are both pending and rejected, are hereby appealed.

(4) Status of Amendments

No amendment was filed subsequent to the Final Office Action dated September 2, 2008.

(5) Summary Of Claimed Subject Matter

Claims 1, 8, and 21 of the present invention are independent claims at issue in this appeal. It should be understood that the citations below to the original disclosure as providing support for claimed features are merely exemplary and do not limit the claimed features to only those citations.

According to one embodiment in claim 1, there is provided an electrostatic actuator for a contact probe storage device comprising:

a first electrode (Fig. 2 at 102; the specification at paragraph 15);

a second electrode supported in a predetermined spaced essentially parallel relationship with the first electrode by resilient members (Figs. 1 and 2 at 100, 104, and 108; the specification at paragraph 15);

a probe configured to engage a medium in which data indicative topographical features are formed, the probe being mounted on the second electrode so as to extend away from the first electrode, wherein only one of the first and second electrodes is configured to have a voltage selectively applied thereto to attract the first and second electrodes toward one another and move the probe away from the medium (Figs. 1 and 2 at 120; the specification at paragraph 19); and

a heater disposed on the second electrode (Figs. 1 and 2 at 112; the specification at paragraph 15);

wherein the second electrode is supported by a plurality of flexible extension members (Figs. 1 and 2 at 104, and 108; the specification at paragraph 15).

According to one embodiment in claim 8, there is provided an electrostatic actuator arrangement for a contact probe storage device comprising:

a probe configured to engage a medium in which data indicative topographical features are formed (Figs. 1 and 2 at 120; the specification at paragraph 15);

linear acting electrostatic motor means for selectively drawing the probe out of engagement with the medium (Fig. 1 at 100 and 102; original claims 8 and 10);

capacitor means for sensing displacement of a probe with respect to the medium which displacement is induced by engagement between the probe and a data indicative topographical feature (Fig. 1 at 100 and 102; the specification at paragraph 15);

flexible support means for supporting the linear acting electrostatic motor means and capacitor means (Figs. 1 and 2 at 104 and 108; the specification at paragraph 15); and

a heater supported on the second electrode (Figs. 1 and 2 at 112; the specification at paragraph 15).

According to one embodiment in claim 21, there is provided a contact probe storage device comprising:

a medium in which data indicative topographical features are formed (Fig. 4 at 128; the specification at paragraph 7); and

at least one electrostatic actuator which is configured so that the actuator and the medium are selectively movable relative to one another (Fig. 2 at 100 and 102; the specification at paragraph 15), the at least one actuator comprising:

a first electrode (Fig. 2 at 102; the specification at paragraph 15);

a second electrode supported in a predetermined spaced essentially parallel relationship with the first electrode by resilient members (Figs. 1 and 2 at 100, 104, and 108; the specification at paragraph 15);

a probe configured to engage the medium in which data indicative topographical features are formed, the probe being mounted on the second electrode so as to extend away from the first electrode, wherein only one of the first and second electrodes is

configured to have a voltage selectively applied thereto to attract the first arid second electrodes toward one another and move the probe away from the medium (Figs. 1 and 2 at 120; the specification at paragraph 19); and

a heater disposed on the second electrode (Figs. 1 and 2 at 112; the specification at paragraph 15);

wherein the second electrode is supported by a plurality of flexible extension members (Figs. 1 and 2 at 104, and 108; the specification at paragraph 15).

(6) Grounds of Rejection to be Reviewed on Appeal

Whether claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,574,279 to Ikeda et al. ("Ikeda") in view of U.S. Patent No. 4,668,865 to Gimzewski et al. ("Gimzewski") and further in view of U.S. Patent No. 5,390,161 to Kurihara et al. ("Kurihara").

(7) Arguments

Reversal of the rejection of claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27 under 35 U.S.C. §103(a) as being unpatentable over Ikeda in view of Gimzewski and further in view of Kurihara is respectfully requested.

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in *KSR International Co. v. Teleflex Inc.*, 550 U.S._, 82 USPQ2d 1385 (2007):

> "Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." Quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

As set forth in MPEP 2143.03, to ascertain the differences between the prior art and the claims at issue, "[a]ll claim limitations must be considered" because "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385. According to the Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of *KSR International Co. v. Teleflex Inc.*, Federal Register, Vol. 72, No. 195, 57526, 57529 (October 10, 2007), once the *Graham* factual inquiries are resolved, there must be a determination of whether the claimed invention would have been obvious to one of ordinary skill in the art based on any one of the following proper rationales:

> (A) Combining prior art elements according to known methods to yield predictable results; (B) Simple substitution of one known element for another to obtain predictable results; (C) Use of known technique to improve similar devices (methods, or products) in the same way; (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (E) "Obvious to try"—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. *KSR International Co. v. Teleflex Inc.*, 550 U.S._, 82 USPQ2d 1385 (2007).

Furthermore, as set forth in *KSR International Co. v. Teleflex Inc.*, quoting from *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006), "[R]ejections on obviousness grounds cannot be

sustained by mere conclusory statements; instead, there must be some articulated reasonings with some rational underpinning to support the legal conclusion of obviousness."

Therefore, if the above-identified criteria and rationales are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

Claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27

Claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ikeda in view of Gimzewski and further in view of Kurihara. The rejection should be reversed for at least the following reasons.

Claim 1 recites an electrostatic actuator for a contract probe storage device comprising, inter alia, a heater disposed on a second electrode. According to the instant patent application, the recited heater of the electrostatic actuator can be used for writing and thermal read-back sensing. Specification at paragraph 34.

The proposed combination of Ikeda, Gimzewski and Kurihara fails to teach or suggest the above-recited features of claim 1. The Final Office Action at page 3 states that Kurihara in Fig. 5 discloses a heater 6 for heating a supporting member 5. In Fig. 5, the heater 6 is used to produce a whisker 4 by heating the supporting member 5 with temperatures of about 800° C and then heating to about 1000° C by using a tungsten filament 8 positioned above the supporting member 5 to evaporate copper, whereby the whisker 4 is grown at an end of the supporting member 5. Kurihara at column 6, lines 18-24. However, the heater 6 will be removed after growing the whisker 4 and does not form a part of a microprobe. For example, in Fig. 6, a microprobe is shown with the whisker 4 but without the heater 6. While Kurihara

discloses that if the whisker 4 in Fig. 6 is broken, it is re-grown by using the heater 6 and the tungsten filament 8 (Kurihara at column 7, lines 23-30), Kurihara fails to teach or suggest that the heater 6 is on the supporting member 5 after the whisker 4 is formed on the microprobe in Figs. 5-6. In fact, there is no need for the heater 6 to be on the supporting member 5 after the whisker 4 is formed in that in writing/reading data using the microprobe of Kurihara, data can be read or recorded by applying a voltage between a recording medium and a probe without applying heat. Kurihara at claims 6 and 8. Thus, Kurihara fails to teach or suggest a heater disposed on a second electrode, wherein the heater is an element of an electrostatic actuator for a contract probe storage device, as discussed for claim 1.

Ikeda fails to cure the above-discussed deficiencies of Kurihara. Ikeda discloses in Fig. 3A a probe 12 of torsion lever structure, where the torsion lever structure includes an upper driving electrode 7 and a fixed electrode 3. However, Ikeda fails to teach or suggest that the upper driving electrode 7 or the fixed electrode 3 has a heater disposed thereon. Further, even if the heater 6 of Kurihara were somehow useable in forming the probe 12 in Fig. 1 of Ikeda by applying heat, Kurihara teaches away from having the heater 6 in the torsion lever structure in Fig. 1 of Ikeda in that there is no need for applying heat after the formation of the probe 12 in Fig. 1 of Ikeda. For example, after the formation of the probe 12 in Fig. 1 of Ikeda, reading/recording data in Ikeda is performed by using a record/reproducing head 71 in Fig. 12 without a need to apply heat.

Gimezewski fails to cure the above-discussed deficiencies of Kurihara and Ikeda. Gimezewski discloses in Fig. 1 a scanning tunneling microscope having a semiconductor chip into which slots are etched to form a central portion linked by a first pair of stripes to an

intermediate portion. Gimezewski at abstract, lines 1-4. However, Gimezewski fails to teach or suggest that the scanning tunneling microscope in Fig. 1 has a heater disposed thereon.

For at least the above reasons, it is respectfully requested that the rejection of claim 1 and its dependent claims under 35 U.S.C. §103(a) as being unpatentable Ikeda in view of Gimzewski and further in view of Kurihara be reversed.

Independent claims 8 and 21 each recite features similar to those features of claim 1 discussed above. Thus, it is respectfully submitted that for the reasons set forth earlier with respect to independent claim 1, that the rejection of claims 8 and 21 and their respective dependent claims under 35 U.S.C. §103(a) as being unpatentable over Ikeda in view of Gimzewski and further in view of Kurihara be reversed.

Accordingly, it is respectfully submitted that the Final Office Action ***failed*** to establish a *prima facie* case of obviousness against claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27. Therefore, reversal of the rejection of these claims and their allowance is respectfully requested.

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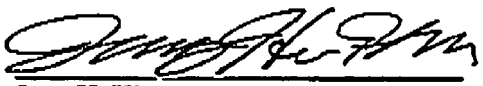
(8) Conclusion

For at least the reasons given above, the rejection of claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27 is improper. Accordingly, it is respectfully requested that such rejection by the Examiner be reversed and these claims be allowed. Attached below for the Board's convenience is an Appendix of claims 1, 2, 4, 6-8, 10-12, 21, 22, 24, 26, and 27 as currently pending.

Please grant any required extensions of time and charge any fees due in connection with this Appeal Brief to deposit account no. 08-2025.

Respectfully submitted,

Dated: December 2, 2008 By 

Jung H. Kim
Registration No.: 51,299
(703) 652-3820

Ashok K. Mannava
Registration No.: 45,301
(703) 652-3822

MANNAVA & KANG, P.C.
11240 Waples Mill Road
Suite 300
Fairfax, VA 22030
(703) 865-5150 (facsimile)

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(9) Claim Appendix

1. (Previously Presented) An electrostatic actuator for a contact probe storage device comprising:

a first electrode;

a second electrode supported in a predetermined spaced essentially parallel relationship with the first electrode by resilient members;

a probe configured to engage a medium in which data indicative topographical features are formed, the probe being mounted on the second electrode so as to extend away from the first electrode, wherein only one of the first and second electrodes is configured to have a voltage selectively applied thereto to attract the first and second electrodes toward one another and move the probe away from the medium; and

a heater disposed on the second electrode;

wherein the second electrode is supported by a plurality of flexible extension members.

2. (Original) An electrostatic actuator as set forth in claim 1, wherein the first and second electrodes are configured to produce a capacitance which varies with the displacement of the probe with respect to the medium.

4. (Previously Presented) An electrostatic actuator as set forth in claim 1, wherein a first pair of the flexible extensions are configured to apply a voltage to the second electrode.

6. (Previously Presented) An electrostatic actuator as set forth in claim 1, wherein the flexible extension members are made of an electrically conductive material.

7. (Previously Presented) An electrostatic actuator as set forth in claim 1, wherein the flexible extension members each have an electrically conductive portion.

8. (Previously Presented) An electrostatic actuator arrangement for a contact probe storage device comprising:

a probe configured to engage a medium in which data indicative topographical features are formed;

linear acting electrostatic motor means for selectively drawing the probe out of engagement with the medium;

capacitor means for sensing displacement of a probe with respect to the medium which displacement is induced by engagement between the probe and a data indicative topographical feature;

flexible support means for supporting the linear acting electrostatic motor means and capacitor means; and

a heater supported on the second electrode.

10. (Previously Presented) An electrostatic actuator arrangement as set forth in claim 8, wherein the capacitor means and the linear acting electrostatic motor means commonly comprise:

a first electrode; and

a second electrode supported in a predetermined spaced essentially parallel relationship with the first electrode;

wherein only one of the first and second electrodes is configured to have a voltage selectively applied thereto.

11. (Previously Presented) An electrostatic actuator arrangement as set forth in claim 10, wherein the flexible support means for supporting the second electrode in the spaced essentially parallel relationship with the first electrode.

12. (Original) An electrostatic actuator arrangement as set forth in claim 11, wherein the flexible support means further comprise means for establishing an electrical connection with the second electrode.

21. (Previously Presented) A contact probe storage device comprising:

a medium in which data indicative topographical features are formed; and

at least one electrostatic actuator which is configured so that the actuator and the medium are selectively movable relative to one another, the at least one actuator comprising:

a first electrode;

a second electrode supported in a predetermined spaced essentially parallel relationship with the first electrode by resilient members;

a probe configured to engage the medium in which data indicative

topographical features are formed, the probe being mounted on the second electrode so as to extend away from the first electrode, wherein only one of the first and second electrodes is configured to have a voltage selectively applied thereto to attract the first arid second electrodes toward one another and move the probe away from the medium; and

a heater disposed on the second electrode;

wherein the second electrode is supported by a plurality of flexible extension members.

22. (Original) A contact probe storage device as set forth in claim 21, wherein the first and second electrodes are configured to produce a capacitance which varies with the displacement of the probe with respect to the medium.

24. (Previously Presented) An electrostatic actuator as set forth in claim 21, wherein a first pair of the flexible extensions are configured to apply a voltage to the second electrode.

26. (Previously Presented) A contact probe storage device as set forth in claim 21, wherein the flexible extension members are made of an electrically conductive material.

27. (Previously Presented) A contact probe storage device as set forth in claim 21, wherein the flexible extension members each have an electrically conductive portion.

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(10) Evidence Appendix

None.

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(11) Related Proceedings Appendix

None.